



This cross-sectional view shows a semiconductor device with a substrate 31 having a P+ region. A layer 32 with an N+ region is formed on the substrate. A layer 33 with an N- region is formed on layer 32. Four vertical structures are formed on layer 33. Each structure consists of a base 36 with an N+ region, a central core 37 with an N- region, and a top cap 38 with an N+ region. The base 36 is surrounded by a P region 39. A layer 40 with a wavy surface is formed on top of the structures. A layer 42 is formed on top of layer 40.

